



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/543,029

07/21/2005

Emmanuel Legrand

047578/294906

9192

826

7590

03/17/2009

ALSTON & BIRD LLP  
BANK OF AMERICA PLAZA  
101 SOUTH TRYON STREET, SUITE 4000  
CHARLOTTE, NC 28280-4000

EXAMINER

PAYER, HWEI SIU CHOU

ART UNIT

PAPER NUMBER

3724

MAIL DATE

DELIVERY MODE

03/17/2009

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.



## Detailed Action

The amendment filed on 12/9/08 has been entered.

### Election/Restriction

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 14 and 16-25, drawn to a cutting head with the special technical feature of a curved portion having a radius of curvature that is greater than a distance that is spaced from an axis of rotation of the head to a linear axis of a passageway of the cutting head.

Group II, claims 26-29, drawn to a cutting head with the special technical feature of having a cutter string projected outside of the cutting head from an exit region of the cutting head only.

Group III, claim 30, drawn to a cutting head with the special technical feature of a curved portion presenting a recessed profile that is suited to the cross-section of a cutter string and is configured to maintain the orientation of the cutter string.

Group IV, claim 31, drawn to a cutting head with the special technical feature of having two curved portions of the cutting head each having a radius of curvature that is different from that of the other's.

2. The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features as set forth above.

3. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, the newly added claims 26-31 have been withdrawn from further consideration as being directed to a non-elected invention.

### **Drawings Objection**

The drawings are objected to because the embodiment shown in Fig.8 does not appear to be correct because none of the curved bearing surface 120 supports the string 300.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an

Art Unit: 3724

application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### **Claims Objection**

Claims 1-14 and 16-25 are objected to because of the following informalities:

(1) While line 2 of claim 1 recites a passageway "for" a cutter string (i.e. the cutter string is not part of the claimed cutting head, however, line 7 of the claim clearly includes the string as part of the claimed cutting head by the limitation "said inner edge engaging a trailing edge of the string". Claims 11 and 12 further evidence the cutter string as part of the cutting head. Thus, at line 2 of the claim 1, "a passageway for a cutter string" should be changed to --a cutter string, a passageway--.

(2) While line 2 of claim 14 recites a passageway "for" a cutter string (i.e. the cutter string is not part of the claimed cutting head, claims 23 and 24 further evidence the cutter string as part of the cutting head. Thus, at line 2 of the claim 14, "a passageway for a cutter string" should be changed to --a cutter string, a passageway--.

Appropriate correction is required.

### **Claims Rejection - 35 U.S.C. 103(a)**

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 3724

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 2, 4-13 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ballas et al. (U.S. Patent No. 4,054,992) in view of Morabit et al. (U.S. Patent No. 6,314,848) and Moore et al. (U.S. Patent No. 6,401,344).

Ballas et al. shows (see Fig.4) a cutting head (64) having substantially all the claimed structure except for the location and the shape of the passageway (66), and further Ballas et al. shows one passageway (66) for engaging with one cutter string (67) rather than two passageways for receiving two cutter strings.

Morabit et al. shows an alternative location for the cutting string passageway. Specifically, as shown in Fig.33 of Morabit et al., the cutting string passageway is located at a distance from a rotation axis (defined by the mounting opening 102) of the cutting head, and there is an additional cutting string passageway spaced from the rotation axis of the cutting head and opposite the first cutting string passageway.

Thus, it would have been obvious to one skilled in the art to modify Ballas et al. by having the passageway (66) spaced from the rotational axis of the cutting head (64) and by providing the cutting head (64) with an additional passageway for receiving additional cutting string to aid in a more efficient cutting operation as taught by Morabit et al.

It is noted the cutting string passageway (66) of the modified Ballas et al. does not extend along an axis (i.e. "a straight line") and it presents a "curvilinear" configuration for preventing the cutting string (67) from sliding away (see column 9, lines 3-42).

Moore et al. shows a “linear” cutting string passageway (i.e. the channel for receiving the cutting string 39 as seen in Fig.8) cooperating with a clamp (15) for retaining the cutting string (39) in the passageway.

In view of this teaching, it would have been obvious to one skilled in the art at to further modify Ballas et al. by making the passageway (66) linear for cooperating with a clamp to retain the cutting string (67) in the passageway because a person of ordinary skill has good reason to pursue the known options (i.e. linear passageway vs. Curvilinear passageway) within his or her technical grasp.

It is noted, in the above modified Ballas et al., the radius of curvature of the curved portion (63) does not appear to be variable.

However, as evidenced by applicant’s claims 4 and 5, the radius of curvature of the curved portion can be either constant or variable, and it appears the claimed “variable” radius of curvature has no criticality. Therefore, to have the curved portion of Ballas et al. present a radius of curvature that is variable as desired would have been obvious to one skilled in the art.

Regarding claim 11, Morabit et al. show cutting strings having a polygonal cross-section (see Fig.14AA, cross-section “71,72,73”).

Therefore, it would have been obvious to one skilled in the art at the time this invention was made to select a well-known cross-sectional shape such as “polygonal” for the cutting string of Ballas et al.

With respect to claim 12, the claimed size of the cutter string is not patentably distinct over Ballas et al. as modified since the size of the cutter string depends more upon the size of its associated string receiving passage than on any inventive concept.

#### **Indication of Allowable Subject Matter**

1. Claim 3 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
2. Claims 14 and 16-24 are objected but would be allowable if amended to overcome the objection as set forth.

#### **Remarks**

Applicant's arguments filed 12/9/08 have been fully considered but they are not persuasive.

In response to Applicant's argument regarding the Morabit et al. reference, it is noted the reference to be modified is "Ballas et al." not "Morabit et al.". In Ballas et al., the inner edge (i.e. the portion of the passageway 66 within which the cutter string 67 is received) of the passageway (66) engages the trailing edge of the string as claimed.

In response to Applicant's argument with respect to "Moore", it is Ballas et al. that is to be modified not the "Moore" reference. Ballas et al. as modified shows "the passageway extends along an axis that is spaced a distance (D) from an axis of rotation of the head" as claimed. See the following illustration.



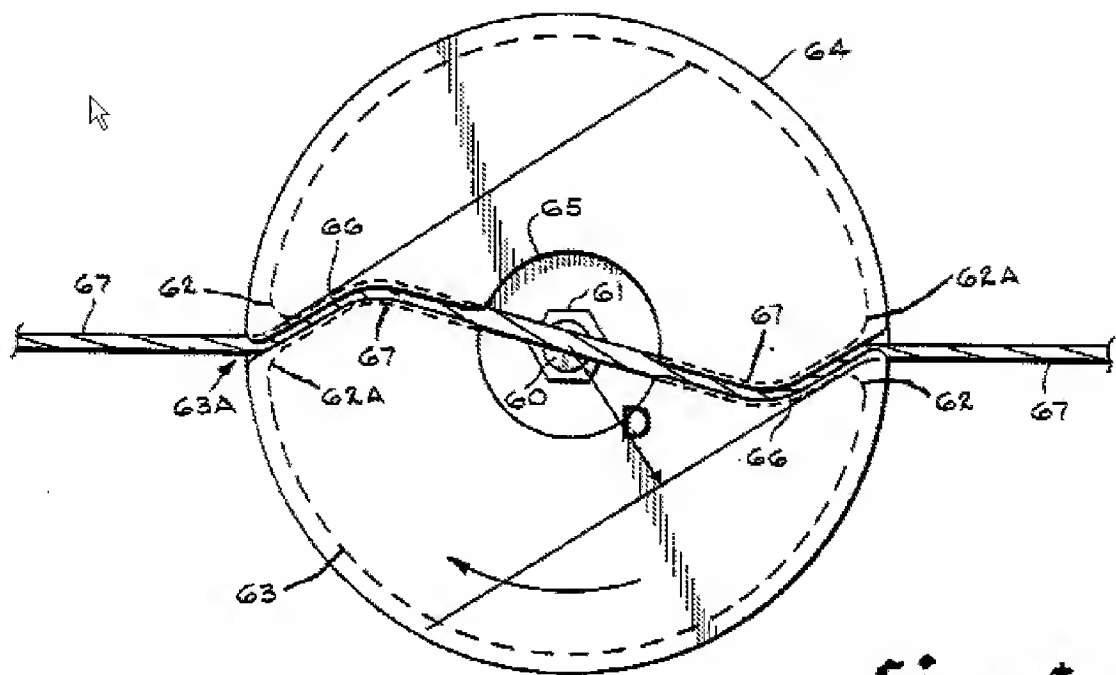


fig.4

Applicant's argument regarding the radius of curvature of the curved portion is persuasive and the rejections on claims 3, 14 and 16-24 have been withdrawn.

## Action Made Final

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

Art Unit: 3724

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### **Point of Contact**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hwei-Siu C. Payer whose telephone number is 571-272-4511. The examiner can normally be reached on Monday through Friday, 7:00 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on 571-272-4502. The fax phone numbers for the organization where this application or proceeding is assigned are 571-273-8300 for official communications and 571-273-4511 for proposed amendments.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

Application/Control Number: 10/543,029

Page 10

Art Unit: 3724

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

H Payer  
March 10, 2009

/Hwei-Siu C. Payer/  
Primary Examiner, Art Unit 3724